

same date and collectors. Paratypes will be found in the collections of the author, the University of Colorado Museum and the U.S. National Museum.

In both *A. origami* and *A. libasa*, some males have the genital capsule rotated. This may be due to pairs being in copula when collected, but has not been noticed in *Microvelia*.

The species may be separated by the characters given in the key.

I am indebted to Dr. Jon Herring for his assistance in diagnosing this material; it was he who first discovered the leaf-like structure of the tarsi.

#### REFERENCES

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### DOLICHOPODIDAE FROM THE PATUXENT WILDLIFE REFUGE, MARYLAND, WITH THE DESCRIPTIONS OF THREE NEW SPECIES OF NEURIGONA (DIPTERA)

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**ABSTRACT**—A list of Dolichopodidae taken in a malaise trap is presented, including several species newly reported from the region and *Neurigona scutitarsis*, also from Pennsylvania, *N. spiculifera*, and *N. smithi*, new species here described by Robinson.

In the spring of 1967 the senior author's colleague David R. Smith maintained a malaise trap in the wooded floodplain of the Patuxent River on the grounds of the Patuxent Wildlife Refuge in Prince Georges

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County, Maryland, in the hope of obtaining sawflies (Hymenoptera). The yield of sawflies was disappointing, but many Diptera of more than passing interest were obtained. We are here listing the Dolichopodidae taken from the trap and describing three species of *Neurigona* found to be new. The descriptions were prepared by Harold Robinson, and the species are therefore to be credited to him; Steyskal prepared the illustrations and the remainder of the manuscript.

#### LIST OF DOLICHOPODIDAE

*Argyra albicans* Loew, 10 May.

*Dolichopus comatus* Loew, 22 April–10 May.

*D. gratus* Loew, 4 June.

\**Gymnopternus currani* Van Duzee, 1 June.

*G. meniscus* Loew, 1–4 June.

\**G. singularis* Van Duzee, 1 June.

\**Nematoproctus metallicus* Van Duzee, 10 May.

\**Neurigona arcuata* Van Duzee, 24 May–20 June.

*N. carbonifer* (Loew), 1–20 June.

\**N. deformis* Van Duzee, 10 May–8 June.

\**N. scutitarsis* Robinson, n. sp., 8 June.

\**N. spiculifera* Robinson, n. sp., 20 June.

\**N. smithi* Robinson, n. sp., 20 June.

*Rhaphium lugubre* Loew, 22 April–10 May.

*R. rotundiceps* (Loew), 10 May.

*Thrypticus muhlenbergiae* Johannsen and Crosby, 1 June.

*T. willistoni* (Wheeler), 10 May–1 June.

The species marked above with an asterisk have not been reported previously from Maryland or Virginia.

#### *Neurigona scutitarsis* Robinson, n. sp.

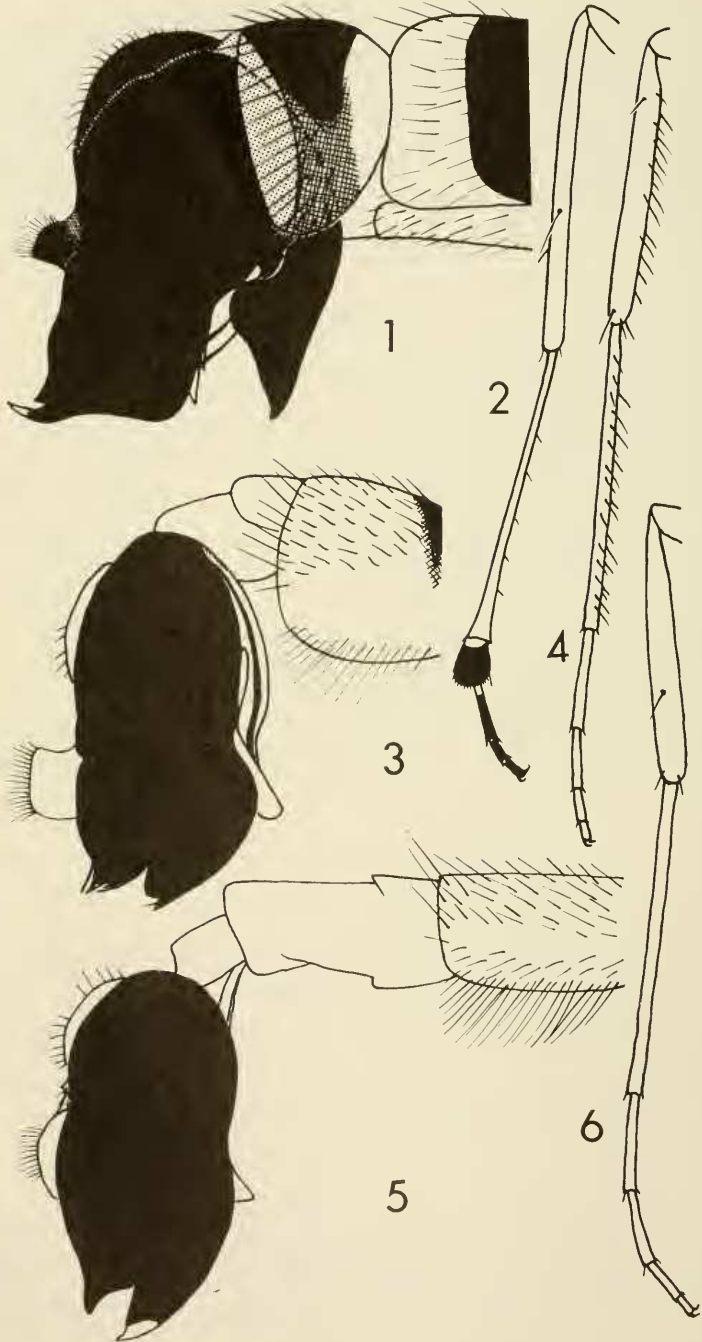
(Figs. 1, 2)

Male.—Length 3.6 mm.; wing 3.2 mm. by 1.2 mm.

Front, face, and palpus white-pollinose, face very narrow, narrowest in middle. Proboscis pale yellowish. Antenna yellow with tip of segment 3 rather brown; segment 1 bare; 2 produced slightly mesally, with small black setae; 3 short triangular; arista from middle of dorsal edge, about as long as face. Orbitals uniseriate, pale.

Mesoscutum metallic green dulled with gray pollen, grayer on pleura and metanotum; scutellum brown with yellow undersurface; metepimeron yellow. Setae black except proepisternal; acrostichals small, biseriate, up to 14 pairs, rows ending before flattened area; *dc* with 7–8 distinctly larger pairs, grading into short hairs anteriorly; scutellum with a pair of large bristles, a small hair on lateral margin.

Coxae, femora, tibiae, fore tarsus, middle metatarsus, hind tarsus to middle of segment 2, whitish; segments 2–5 of middle tarsus blackish except on basal edges; hind tarsus brownish distally. Hairs of fore coxa pale, a few dark setae distally on anterior surface of middle coxa, hind coxa with a large black external bristle.



Setae of legs mostly black, pale hairs ventrally on femora, no preapicals. Fore tibia plain; metatarsus slightly sinuous with many short erect pale setae along anteroventral surface, a black apical anteroventrally, last segment narrowly clavate; middle tibia (fig. 2) with a pair of small dorsals beyond the middle, one distinct apical dorsally; metatarsus very slender with 4–5 small posteroventrals, segment 2 compressed and broadly obovate, distal segments with very slightly flaring tips; hind tibia with 1–3 small indistinct dorsals; tarsus plain. Lengths of leg parts in mm. as follows: fore leg, coxa 0.8, femur 1.0, tibia 1.2, segments of tarsus from base 0.8, 0.6, 0.3, 0.15, 0.3; middle leg, tibia 2.0, segments of tarsus 1.7, 0.3, 0.3, 0.2, 0.15; hind leg, tibia 2.4, segments of tarsus 0.8, 0.9, 0.4, 0.2, 0.15.

Wing broadly elliptical; veins brown; vein 2 slightly and vein 3 strongly curving back distally; vein 4 with rather sharp forward bend in middle of last part, ending near tip of vein 3 and distinctly before wing apex; crossvein rather oblique, more basad behind,  $\frac{1}{2}$  as long as last part of vein 5; vein 6 represented by long distinct fold. Calypter, setae, and halter pale.

Abdominal tergum 1 yellow, 2–4 brown with broadly yellow hind and lateral margins, tergum 5 short and brown, 6 hidden; terga 4–5 with pale hairs toward lateral margins, setae otherwise dark. Hypopygium (fig. 1) rather large, mounted rather squarely on tip of preabdomen, black, with dull-surfaced ovate flange above, apical beak and pair of large sharp-pointed subapical flanges shining black; minute black dark-haired appendages below at base of beak.

Holotype, male, Patuxent Wildlife Refuge, Prince Georges County, Maryland, 8 June 1967 (D. R. Smith); paratype, male, 5 mi. NW Davidsburg, Pennsylvania, 30 May 1967 (Paul Spangler); no. 70722 in U. S. National Museum.

*N. scutitarsis* would key among the species with dark mesoscuta to *N. aestiva* Van Duzee in the treatment of the Southeastern Dolichopodidae (Robinson, 1964). The species is distinct from all putative relatives, however, by the markedly enlarged 2nd segment of the male middle tarsus. The modified 1st and last segments of the fore tarsus are also distinctive.

***Neurigona spiculifera* Robinson, n. sp.**

(Figs. 3, 4)

Male.—Length 4.3 mm.; wing 3.8 mm. by 1.2 mm.

Front, face, and palpus white-pollinose, face with long narrow triangles above and below, eyes essentially contiguous in middle. Proboscis yellowish. Antenna yellow; segment 1 bare; 2 produced very slightly mesally, with small black setae; 3 short truncate; arista apical at upper edge, about as long as face. Orbitals uniseriate, upper 2–3 pairs black, others pale.

Mesoscutum shining yellow with flattened posterior slope black, scutellum and most of pleura whitish; metascutum, most of mesanepisternum, anterior part of mesokatepisternum, smaller spot under calypter, and lower meron blackish; all

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FIGS. 1–6. *Neurigona* species, males, anterior views of right middle tibia and tarsus (1, 3, 5) and profiles of terminal abdominal segments, including hypopygium (2, 4, 6): 1, 2, *N. scutitarsis*, n. sp.; 3, 4, *N. spiculifera*, n. sp.; 5, 6, *N. smithi*, n. sp.

pleura dulled with grayish pollen. Setae black except proepisternal; acrostichals small, biseriate, ca. 12 pairs, last of rows diverging at front of flattened area; *dc* 6 distinct pairs, preceded by a series of very small setae; scutellum with pair of large bristles, 4–5 small stiff marginal hairs.

Legs yellow. Fore coxa with pale hairs anteriorly and apical setae black; numerous black setae distally on anterior surface of middle coxa; large black external bristle on hind coxa. Setae of legs mostly black, pale hairs ventrally on femora, no preapicals. Fore leg plain, tibia with 2 of the anteroventral rows of setae paler; middle tibia (fig. 4) with small anterodorsal near base and a few other distal indistinct dorsals, 2–3 distinct apicals, many close-set ventrals, 8–9 distinct anteroventrally and 5 posteroventrally, continuing series on metatarsus with up to 16 anteriorly and 10 rather indistinct posteriorly; a row of very small close-set erect pale hairs mid-ventrally continuous along tibia and segments 1–4 of tarsus; hind tibia with 4–5 rather indistinct dorsals, 4 small apicals; metatarsus with about 5 scattered rather indistinct ventral setae. Lengths of leg parts in mm. as follows: fore legs, coxa 0.9, femur 1.3, tibia 1.5, segments of tarsus from base 1.3, 0.5, 0.3, 0.2, 0.1; middle leg, tibia 1.6, segments of tarsus 1.8, 0.6, 0.4, 0.2, 0.15.

Wing narrowly oval; veins yellowish brown; vein 2 straight; vein 3 distinctly curving backward distally; vein 4 sinuous, curving rather gradually forward in middle of last part and backward beyond, ending rather near tip of vein 3 and distinctly before wing apex; crossvein scarcely oblique,  $\frac{1}{2}$  as long as last part of vein 5; vein 6 represented by distinct fold. Calypter, setae, and halter pale.

Abdominal tergum 1 yellow, 2–5 yellow with narrow black band across base almost reaching sides, setae black; sterna yellow with pale hairs. Hypopygium (fig. 3) blackish with yellowish lateral basal sclerite and upper surface, compact, rather cylindrical, projecting downward from end of preabdomen, basal  $\frac{1}{2}$  a capsule, distal  $\frac{1}{2}$  a short-pointed beak and pair of appressed flanges; minute white pale-pubescent appendage below at base of beak.

Holotype, male, Patuxent Wildlife Refuge, Prince Georges County, Maryland, 20 June 1967 (D. R. Smith), no. 70723 in U. S. National Museum.

*N. spiculifera* would key to *N. rubella* (Loew), *N. nitida* Van Duzee, or *N. perplexa* Van Duzee in Robinson (1964). In general structure of the hypopygium and color of the body it seems obviously related to this *N. rubella*–*N. maculata* complex. Of these, only *N. maculata* Van Duzee shows similar ventral setae on the middle tibia and metatarsus, and that species differs by these setae being in a single distinct row, by the 3rd antennal segment being more triangular, and by having the last 2 segments of the fore tarsus slightly modified.

***Neurigona smithi* Robinson, n. sp.**

(Figs. 5, 6)

Male.—Length 4.0 mm.; wing 3.5 mm. by 1.2 mm.

Head as in *N. spiculifera* (see above), but antennal segment 3 slightly pointed, short triangular, arista from middle of dorsal edge.

Mesoscutum shining yellow including flattened posterior slope, scutellum paler, small black spot under calypter and faint dark median line on metascutum; sparse



grayish pollen on pleura. Setae black except proepisternal; acrostichals small, biserial, ca. 12 pairs, last of rows diverging at front of flattened area; *dc* 7 distinct pairs, preceded by series of somewhat smaller setae; scutellum with a pair of large bristles, a small seta on each lateral margin.

Legs yellow. Fore coxa with pale hairs anteriorly and black bristles apically; numerous black setae distally on anterior surface of middle coxa; large black external bristle on hind coxa. Setae of legs mostly black, pale hairs ventrally on femora, no preapicals. Legs all plain; middle tibia (fig. 6) with a small anterodorsal beyond middle, 2 apicals dorsally, metatarsus with pair of ventrals at base and ca. 5 others indistinct along ventral surface; hind tibia with 1-2 indistinct posterodorsals, 3-4 small apicals, metatarsus with a few rather distinct ventrals distally. Lengths of leg parts in mm. as follows: fore leg, coxa 0.7, femur 1.3, tibia 1.5, segments of tarsus from base 1.0, 0.5, 0.6, 0.4, 0.15; middle leg, tibia 1.6, segments of tarsus 1.6, 0.6, 0.4, 0.25, 0.15; hind leg, tibia 2.8, segments of tarsus 0.7, 0.9, 0.5, 0.3, 0.15.

Wing narrowly oval; veins brown; vein 2 straight; vein 3 curving distinctly backward at tip; vein 4 arching from forward bend in middle of last part to end near tip of vein 3 distinctly before wing apex; crossvein rather oblique, more basad behind, a little less than  $\frac{1}{2}$  as long as last part of vein 5; vein 6 represented by long distinct fold. Calypter, setae, and halter pale.

Abdominal tergum 1, 5, and 6 yellow, 2 yellow on sides and across middle, with dark band along base and hind margin, terga 3-4 blackish with large yellow spot in middle of side, spot on 4 continuing to hind margin, setae black, tergum 6 long, glabrous; sterna yellow with pale hairs. Hypopygium (fig. 5) black with basal lateral sclerite yellow, compact, rather cylindrical, projecting downward from end of preabdomen, basal  $\frac{1}{2}$  a capsule, distal  $\frac{1}{2}$  a rather broad acuminate beak and appressed pair of flanges, minute brownish densely pubescent appendages below at base of beak.

Holotype, male, Patuxent Wildlife Refuge, Prince Georges County, Maryland, 20 June 1967 (D. R. Smith), no. 70724 in U. S. National Museum.

*N. smithi* is named for its collector as a mark of appreciation in making the material available. The species would key to the *N. disjuncta*-*N. floridula* complex in Robinson (1964), but the color and structure of the hypopygium indicate relationship rather to the *N. maculata*-*N. rubella* complex. In general details this and the preceding species are very close. The only other species in the complex lacking black color on the posterior slope of the mesoscutum is *N. maculata* Van Duzee, which has modified fore and middle legs (see preceding discussion). The more extensively darkened 3rd and 4th segments of the abdomen and the more exerted 6th tergum are also distinctive of the new species.

#### REFERENCE

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